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REMARKS

Amendments to Claims

Claims 11, 25, and 37 have been amended to delete compound (ii), thereby limiting the claims to hydrofluorocarbons, fluoroethers, and fluoroetheramines.

Claims 11, 13-15, 22, 24-28, 31, 32, 33, 37, 39, 40, 41, 44-46, and 50 have been amended to specifically limit the suitable compound to a liquid compound, thus incorporating the limitations of Claims 21, 34, and 47 into the amended claims.

Claims 21, 34, and 47 have been cancelled.

Additionally some minor changes in wording have been made in several claims that change neither the meaning nor scope of the claims.

All changes are indicated with deletions struck through, and additions underlined.

Rejection Under Section 102(b)

Claims 11, 25, and 37 were as anticipated by Sakurai. This rejection is respectfully traversed. Applicant respectfully directs the Examiner's attention to the subject matter now recited in claims 11, 25, and 37. Claim 11 is directed to a process for preparing highly transparent fluorinated hydrocarbons, fluorinated ethers, and fluorinated ether-amines of specified certain specified compositions. Claims 25 and 37 are directed to processes for forming an image using highly transparent liquid fluorinated hydrocarbons, fluorinated ethers, and fluorinated ether-amines of specified certain specified compositions. Nowhere does Applicant claim perfluoroalkyl radicals, as asserted by Examiner.

The highly transparent liquid fluorinated hydrocarbons, fluorinated ethers, and fluorinated ether-amines employed in the instant processes contain fluoroalkyl radicals, as do many known organic compounds. However, Sakurai's disclosure is limited to acrylate monomers containing fluoroalkyl radicals whereas Applicant's processes are limited to the use of fluorinated hydrocarbons, fluorinated ethers, and fluorinated ether-amines, none of which are disclosed by Sakurai. Furthermore, none of the compositions employed in the instantly claimed processes are acrylates. Therefore Sakurai does not disclose the same compositions as those employed by Applicant, and Sakurai therefore is disqualified as anticipating art.

As stated in the MPEP §706.02, "for anticipation under 35 U.S.C. §102, the reference must teach every aspect of the claimed invention either explicitly or impliedly. Any feature not directly taught must be inherently present." Since Sakurai

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does not disclose the compositions to which the processes of the instantly claimed invention are limited, Sakurai does not meet the requirements for an anticipating reference.

Rejection under §102(e)

Claims 11-17, 19-21, 23-30, 32-34, 37-43, 45-47, 49-50, 53-56 were rejected as anticipated by Wheland. Applicant respectfully submits that the Examiner may be confusing several aspects of Wheland with each other, and with the subject matter in the instant application.

Wheland discloses an optical element that is, indeed, an organic composition. However, in Wheland the optical element is a polymer (see the abstract and Col 3 lines 7 and 37. The element in the instant application that may be deemed to serve an equivalent function to the optical element in Wheland is not a polymer. The non-polymeric organic fluids employed in the instant invention are specifically recited in Claims 11, 25, and 37, as amended, as compounds i, ii, and iv – x. Applicant respectfully requests Examiner to state specifically which of compounds i, ii, and iv-x are polymers.

Examiner states that the polymer disclosed by Wheland comprises a "copolymer of linear hydrofluorocarbons" with various limitations to them. Applicant so acknowledges, and Applicant further acknowledges the similarity between the limitations on the suitable linear hydrocarbons in Wheland and those on some of the compounds i, ii, and iv-x of the instant application. However, Applicant respectfully points out to Examiner that all of the linear hydrocarbons of Wheland are olefins whereas none of the compounds recited for use in the instant invention are olefins. This is an important point, because the olefins of Wheland are inoperable in the present invention because, as is well known in the art, olefinic double bonds are highly absorbing in the ultraviolet. Indeed, it is one of the achievements of the instant invention that the saturated species recited in compounds i, ii, and iv-x could be purified of olefinic contamination sufficiently well to realize the observed improvements in UV transparency.

The Examiner further asserts that Wheland discloses that the transparent fluoropolymer composition includes fluoroethers, and that Wheland discloses the claimed perfluoro compound as the optically transparent composition. The Examiner states that "Wheland in Col 5 lines 56-67 and Col 6 lines 1-26 discloses that the transparent fluoro polymer composition includes fluoroethers..." Applicant respectfully disagrees. The cited passage in Wheland is simply a table reciting abbreviations for the various materials employed in the preparation of Examples. Applicant respectfully requests the Examiner to indicate specifically where in the cited passage Wheland makes the alleged disclosure. The mere appearance of a

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chemical compound on a list of abbreviations does not constitute an anticipatory disclosure of the present claimed invention.

The Examiner further states that "Wheland in Col 15, lines 1-40, and Col. 16 lines 3-7, discloses the claimed perfluoro compound as the optically transparent composition." Applicant respectfully traverses Examiner's assertion. Examiner refers to "claimed perfluoro compound." Applicant finds this confusing. None of the claims in the instant application claim a perfluoro compound, or any compounds. All the claims in the case are method or process claims. By stating the "claimed perfluoro compound" Applicant can only assume that Examiner intends to refer to the perfluorocarbon embodiments of the compounds recited as useful in the processes of the instant invention, namely the perfluorocarbon embodiments of compounds I, II, IV-X as recited in Claims 11, 25, and 37 as amended. Applicant respectfully points out to the Examiner that there is recited in Wheland Col 15 lines 1-40, and Col 16 lines 3-7 not one of the perfluorocarbon species encompassed by the recited compounds I, II, IV-X in the instant application as amended. Applicant requests the Examiner to state specifically to which perfluorocarbon species recited in Wheland col 15 lines 1-40 and col 16 lines 3-7 she refers.

The Examiner states that "Wheland in Col 24, lines 1-3, discloses that the organic composition includes ... CF₃CFH CFHCF₂CF₃." Applicant respectfully disagrees. Applicant wishes to point out that nowhere in Wheland is the term "organic composition" recited. Applicant is unsure to what the term "the organic composition" actually refers. Applicant can therefore only assume that Examiner wishes to refer to the polymer of Wheland.

Applicant respectfully that the Examiner's use of the term "organic composition" in place of the actual chemical terms employed in the reference results in an undesirable lack of precision and has confused Applicant. It is well known that many types of organic compositions are patentable over other pre-existing organic compositions. The fact that the compositions of Wheland are organic, and the instant compositions are organic, and that they are employed in similar ways, does not mean that the methods of Wheland employing the organic compositions of Wheland anticipate those in the instant invention.

Applicant acknowledges that Wheland discloses the use of CF₃CFH CFHCF₂CF₃. But if the term "the organic composition" refers to the polymer of Wheland, Applicant traverses the Examiner's assertion that Wheland discloses that

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the polymer composition employed therein is "included." In Wheland Col 24 lines 1-3 it is disclosed that $\text{CF}_3\text{CFH CFHCF}_2\text{CF}_3$ is employed as a solvent for the polymerization initiator. That is all. In Col. 24 lines 5-7, it is stated that following the polymerization the autoclave was vented, the solvent evaporated off, and the polymer dried. There is no indication whatever that the $\text{CF}_3\text{CFH CFHCF}_2\text{CF}_3$ initiator solvent is incorporated into the polymer composition.

The Examiner states in *Response to Arguments*, that in Applicant's reply of August 9, 2006, Applicant stated that Wheland et al. does not disclose an organic composition. Applicant has not so stated. Applicant respectfully requests Examiner to specifically show where Applicant so states. The Examiner cites Col 6 lines 53-58 as reciting the same composition as that in the instant claims. Wheland discloses perfluoroalkanes having up to six carbons in a linear chain. Applicant has amended the claims by deleting compound III in order to bring Applicant's invention into conformity with Examiner's reason for rejection.

Applicant has stated previously, and here reiterates, that the disclosure of Wheland is limited to polymers and that the compositions employed in the processes of the instant application are not polymers. The processes claimed in the instant invention, as amended, are limited to the use of compositions that are NOT polymers and NOT disclosed in Wheland.

Applicant asserts that because Wheland et al. is limited to polymers while the instant invention is limited to the use of non-polymeric organic liquids that are not recited in Wheland as suitable for such use, Wheland fails to meet the requirements of MPEP §706.02, as quoted above. Wheland et al. is therefore disqualified as anticipating art.

Rejection Under 35 U.S.C. § 103

Claims 18, 31, and 44 were rejected as unpatentable over Sakurai in view of Deviny. The Examiner states in *Response to Arguments* that "Deviny is depended upon to disclose the use of the claimed optically transparent compound as an optically transparent compound."

This rejection is respectfully traversed. Quoting from Deviny, Col. 5, lines 57-68.

FIG. 2 shows a preferred apparatus for use in curing coatings on articles placed on a continuously moving belt. Vessel 10 has a lower portion containing a reservoir 5 filled with inert perfluorochemical liquid 4 and heated by heater 2. Cooling coils 13 and 14 for condensing the hot perfluorochemical vapors 6 are located in the inlet 11 and outlet 12 of the upper portion of vessel 10. Coating 8 on substrate 7 is carried through vessel 10 on continuously moving belt 15. Coating 8 is cured by vapors 6.

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and radiant energy from energy sources 9 passing through windows 16 (made, for example, from quartz).

Quoting further from Deviny, Col. 6 lines 23-32

A list of preferred inert perfluorochemical liquids and their boiling points is shown below. The boiling point data is taken from R. D. Danielson, "Fluoro Ethers and Amines", Kirk-Othmer Encyclopedia of Chemical Technology, 3rd Ed., 10, p. 875, John Wiley & Sons (N.Y., 1980).

	Liquid Boiling point, °C.
Perfluoro-4-methylmorpholine	51

Applicant asserts that Deviny discloses the use of perfluoro-4-methylmorpholine as a heat transfer fluid for curing a cross-linkable coating. Deviny's disclosure refers to immersion of a curable film in the vapor of perfluoro-4-methylmorpholine. As amended, the instant claims are limited to the use of a liquid immersion fluid.

Deviny is silent regarding optical transparency of liquid perfluoro-4-methylmorpholine. The Examiner will appreciate that the absorbance of a liquid is expected to be much higher by virtue of much higher density than that of the corresponding vapor. As a result, the transparency of a vapor does not predict the transparency of the corresponding liquid. Indeed, one of the findings associated with the present invention was that extensive purification is necessary and effective to prepare the desired optical transparency in the liquid suitable for use in the instant invention.

The Examiner further rejects claims 22 and 48 as unpatentable over Sakurai in view of Hatzakis. Applicant acknowledges that freeze-thaw cycling is a well-established method for purifying chemical compounds of a wide variety. In that regard, Applicant acknowledges that one of ordinary skill in the art confronted with the need to extract UV-absorbing impurities from the liquid compositions from compounds i, ii, iv-x recited in the claims might be led to try freeze-thaw cycling to achieve a desirable level of transparency. However, there is no teaching in the art that such a procedure will actually be effective in reducing the UV absorbance of the liquid compounds recited in the present claims in order to render them useful in immersion lithography in the UV. One of skill in the art could not know without trying whether freeze-thaw cycling were effective. Applicant submits that "obvious to try" is not a proper standard for determining obviousness.

Claims 35-36 and 51-52 were rejected as unpatentable over Sakurai in view of Switkes. The Examiner states that combining Switkes teaching of liquid immersion lithography with Sakurai's disclosure of acrylate polymers for use in photolithography

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would lead one of ordinary skill in the art to Applicant's invention. Applicant respectfully traverses Examiner's assertion, and Applicant further asserts that Examiner has failed to make a *prima facie* case of obviousness.

Applicant's claims are limited to the liquid compounds of i, ii, iv-x as recited in the claims, as amended. No where in Sakurai nor Switkes is that limitation taught or suggested. Quoting the MPEP, section 706.02(j) (emphasis added):

"Finally, the prior art reference (or references when combined) must teach or suggest *all the claim limitations*. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure.

The combination of references cited by Examiner fail to teach or suggest all the claim limitations in the instant application, and therefore the cited combination of references is disqualified at prior art under 35 U.S.C. §103.

Examiner's Response to Arguments

Applicant has amended the claims to render moot the refutation Examiner makes to Applicant's arguments of August 9, 2006. Compound iii has been deleted from the claims thereby overcoming the Wheland reference, and the term "liquid" has been incorporated into the independent claims as an additional limitation thereby overcoming the Deviny reference.

Request for Interview

In view of the number of issues raised in the Office Action, Applicant respectfully requests that the Examiner grant Applicant's undersigned representative a telephone interview to resolve outstanding issues. Applicant's representative can be reached at 302 992 4947. The Examiner is respectfully requested to contact Applicant's representative to arrange a mutually convenient time for an interview.

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Conclusion

In light of the amendments made to the claims and the foregoing arguments, Applicant believes that the claims, as amended, are in suitable condition for allowance and requests Examiner to advance them thereto.

Respectfully submitted,

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